June 3, 1930. R. B. KEPLINGER ET AL 1,761,631

CLAY TEXTURING AND COLORING APPARATUS

Filed March 28, 1928 3 Sheets-Sheet 1

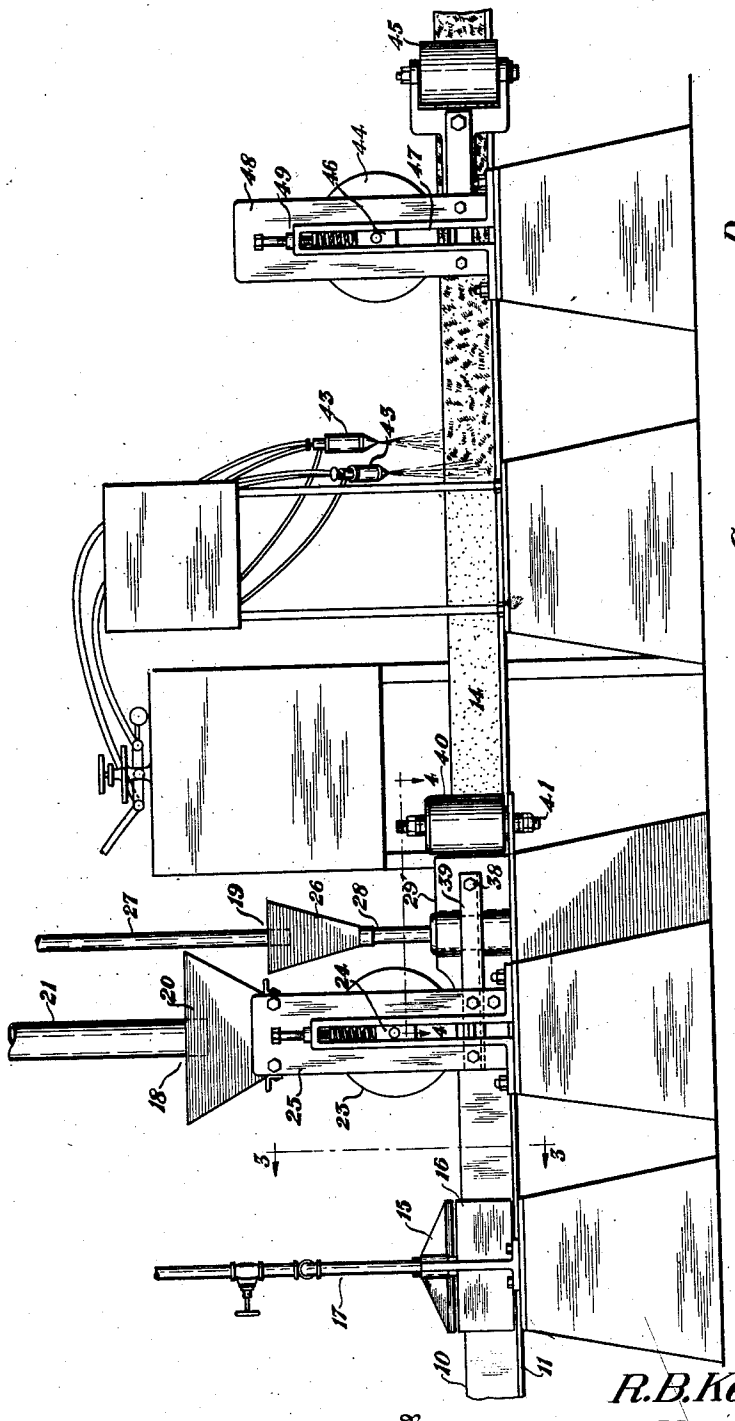


Fig. 1

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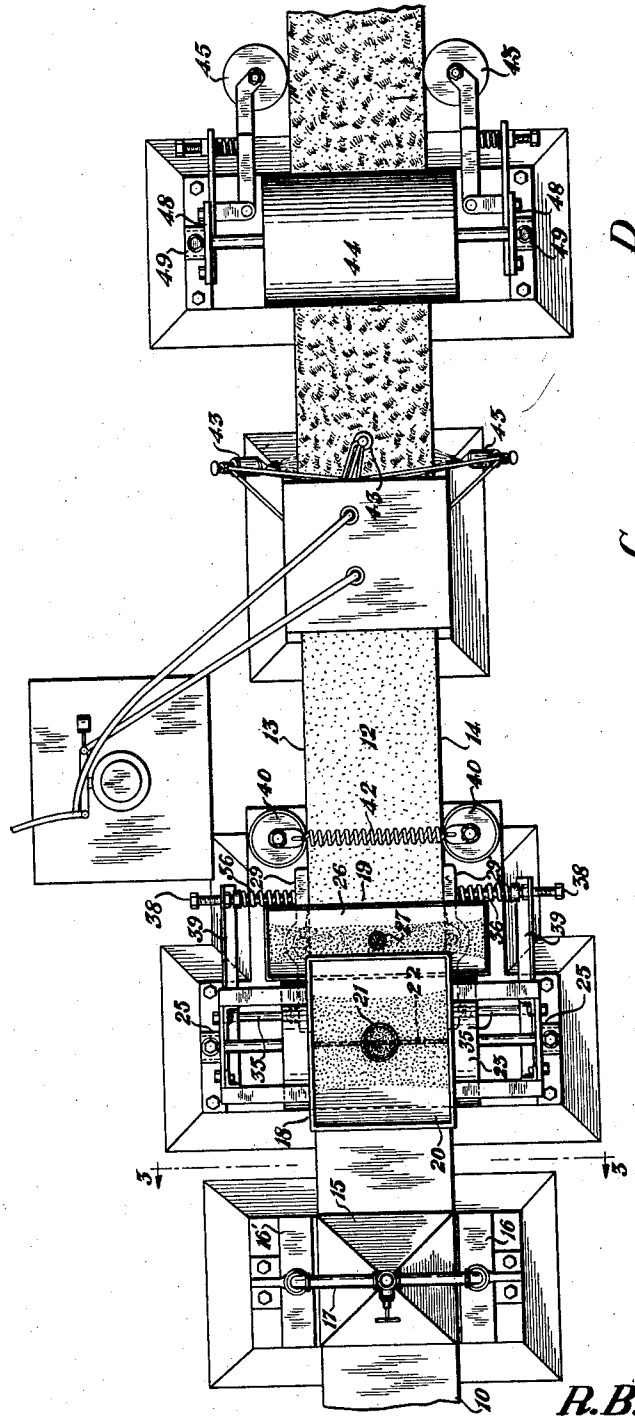


Fig. 2

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CLAY TEXTURING AND COLORING APPARATUS

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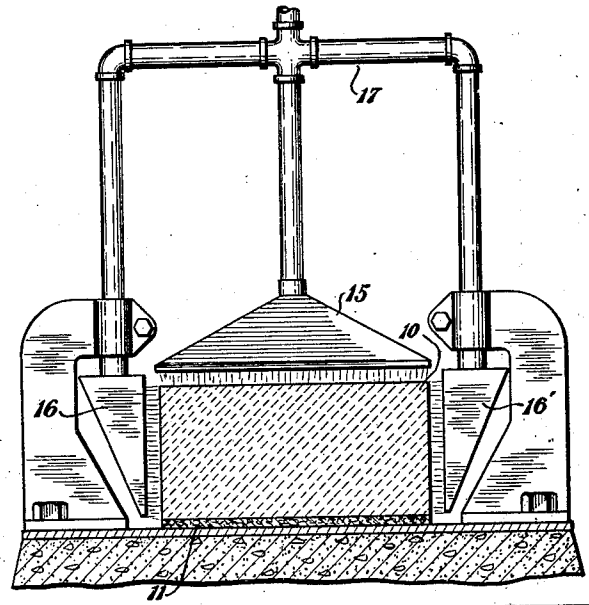


Fig. 3

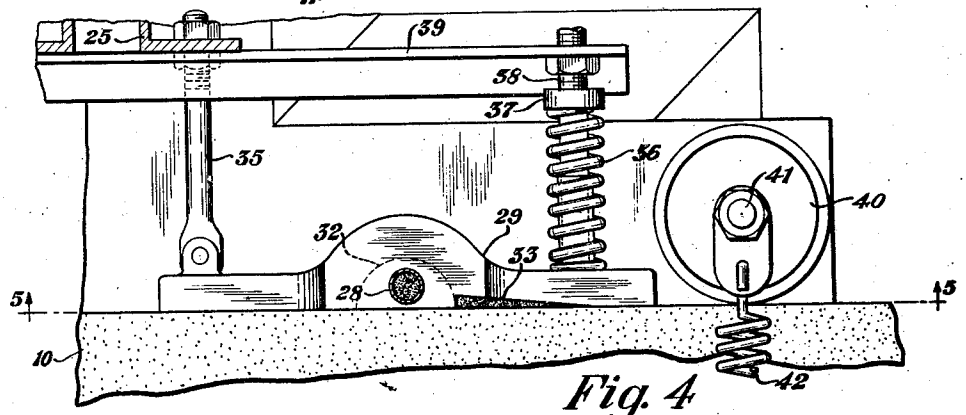


Fig. 4

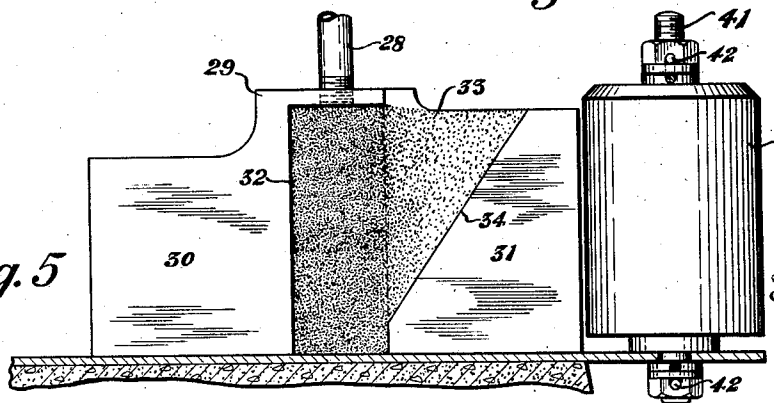


Fig. 5

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UNITED STATES PATENT OFFICE

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CLAY TEXTURING AND COLORING APPARATUS

Application filed March 28, 1928. Serial No. 265,398.

Our invention relates to apparatus for making textured and colored clay products, such as brick, tile, or the like.

One method of manufacturing such clay products includes forming a column of clay by forcing the clay through a suitably shaped die, and by continuously passing the moving clay column issuing from the die, through cutters which separate the column into the desired brick or tile, after which the formed brick or tile are dried, and then burned.

Various methods have been proposed for texturing and coloring the brick or tile by performing one or more operations upon the clay column after it issues from the die, and either before or after it passes through the cutters.

Among such texturing operations, it has been attempted to apply sand, ground shale, ground clay, or other comminuted material as by rolling upon the top surface of the moving clay column, but it has been found difficult to cause such applied comminuted material to adhere during the remaining steps in the complete process of manufacturing the brick, tile, or the like.

Furthermore, it has been found difficult if not impossible to apply such material to the sides of the moving clay column, which become the ends or sides of the resulting brick, or the like.

Accordingly, a principal object of the present improvements includes the provision of an apparatus for applying comminuted material on the top and sides of a moving clay column, so that the applied material will adhere thereto during all of the steps in the complete process of manufacturing the brick, tile, or the like therefrom.

A further object of the present improvements includes the provision of an apparatus for variably texturing, coloring, and distorting a moving clay column, whereby brick similar to hand pressed brick and the like may be manufactured by quantity production methods.

These and ancillary objects are attained by the use of the improved apparatus constituting preferred embodiments of the present invention, hereinafter set forth in detail. The improved method may be stated in general terms as including: first, moistening under pressure the top and sides of a moving clay column either before or after it has been cut; then, applying comminuted material, which may include coloring material, to the moistened top and sides thereof; then, pressing the applied material into the moistened surfaces; then, for attaining certain textures and colors, again moistening with fluid, which is preferably under pressure and which may contain coloring material, the top and sides of the moving column into which the comminuted material has been applied and pressed; and finally, as may be desired, again applying pressure to the top and sides of the moving column, which may distort the same; after which the brick, tile, or the like may be cut if they have not already been cut from the column, and dried and burned in the usual manner.

A preferred improved apparatus for carrying out the improved method of the present invention is illustrated in the accompanying drawings forming part hereof, in which

Figure 1 is a side elevation of the preferred apparatus;

Fig. 2, a top plan view thereof;

Fig. 3, a fragmentary sectional view thereof as on line 3—3, Figs. 1 and 2;

Fig. 4, an enlarged fragmentary plan sectional view thereof as on line 4—4, Fig. 1; and

Fig. 5, a fragmentary vertical view thereof as on line 5—5, Fig. 4.

Similar numerals refer to similar parts throughout the several views.

In carrying out the present improved method by the use of the present improved apparatus, a moving clay column 10 is carried from a forming die, not shown, as by means of a conveyer indicated at 11, and is subject successively to the actions of the following processing means: first, the steaming or moistening means indicated generally at A, and which moistens the top 12 and the normally vertical sides 13 and 14 of the column 10; then, the means indicated generally at B for applying and pressing comminuted material, such as sand, ground shale, ground

clay, or the like, and which may include coloring material, upon and into the top and sides of the moving clay column; then, the means indicated generally at C for again moistening the top and sides of the column with a fluid, preferably applied under pressure, and which may contain coloring material; and finally, the means indicated generally at D for applying pressure, preferably rolling, and which may be distorting pressure, to the top and sides of the column.

The steaming and moistening means indicated generally at A, for moistening the top 12 and the normally vertical sides 13 and 14 of the column 10, may include a spray head 15 located above the top of the column and extending across the entire width thereof, a spray head 16 at one side of the column and extending across the entire depth thereof, and another spray head 16′ at the other side of the column and extending across the entire depth thereof.

Each of the spray heads is provided with a plurality of openings for directing streams of fluid which may be steam or any desired liquid, preferably under pressure, for moistening the top and side surfaces of the column for preparing the same for retaining comminuted material applied thereon.

Suitable piping indicated at 17 delivers the fluid under pressure to the several spray heads from a suitable source of supply not shown.

The means for applying and pressing comminuted material upon the top and sides of the moving column, indicated generally at B, may include means 18 for applying and pressing comminuted material upon and into the top of the column, and means 19 for applying and pressing comminuted material upon and into the sides of the column.

The means 18 for applying and pressing comminuted material upon and into the top of the moving column may include a hopper 20 into which the comminuted material may be delivered as through a pipe 21; and the hopper 20 has a lower slit opening 22 extending cross-wise of the top of the column and through which the comminuted material may drop upon the surface of a roll 23 located above and rolling on the top of the moving column, and journalled at each of its ends in a suitable spring pressed journal bearing 24, each carried upon a suitable bracket 25, which may support the hopper 20.

The comminuted material dropping on the roll 23 is carried thereby and applied and pressed upon and into the top surface of the moving column as the same passes beneath the roll.

The means 19 for applying and pressing comminuted material upon and into the sides of the moving column may include a hopper 26 into which the comminuted material may be delivered as through a pipe 27; and the hopper is provided at each side with an outlet pipe 28, the pipes communicating respectively with improved sleds 29 and 29′.

The sleds 29 and 29′ are similar in construction, and are arranged to operate on opposite sides of the moving clay column.

For example the sled 29 includes inner coplanar surfaces 30 and 31 separated from each other by angled surfaces including a semi-cylindric vertically extending groove 32 which communicates with one of the pipes 28. The surface 30 may be considered the head surface and the surface 31 may be considered the tail surface, as the surface 31 first presses against the side of the advancing clay column.

An angled surface 33 connects an upper angled edge 34 of the surface 31 with the semi-cylindric groove 32, and the angled surface 33 forms with the side of the advancing clay column an inverted pyramidical extension of the semi-cylindric reservoir for comminuted material formed by the groove 32 and the side of the advancing clay column; both the semi-cylindric reservoir and the inverted pyramidical extension serving to evenly distribute the comminuted material across the normally vertical side of the advancing column, and the tail surface 31 serving to press the material into the side.

Means for varying the pressure of the surfaces 30 and 31 against the side of the column are provided by a laterally extending bar 35 pivotally connected at its inner end with the inner end of the sled, and adjustably secured at its outer end upon one of the brackets 25, and by a compression spring 36 urged against the outer surface of the tail end of the sled as by means of a shoulder 37 on a bolt 38, the outer end of which is adjustably secured on an extension 39 of the bracket 25.

For further pressing the comminuted material into the sides of the column, a roll 40 may be arranged with its axis vertical at each side of the column and mounted for rotation on shafts 41 which are connected at their upper and lower ends as by springs 42 for urging the rolls towards each other and against the sides of the column.

The means indicated generally at C for the second moistening of the top and sides of the column by fluid preferably applied under pressure and which may contain coloring material, may include spray nozzles 43 directed towards the top and sides of the column, and connected with a suitable source of supply of the fluid under pressure.

The means indicated generally at D for applying pressure, preferably rolling pressure, and if desired, distorting pressure to the top and sides of the column, includes an upper roll 44 having a transversely extending axis for rolling on the top of the column, and side rolls 45 having vertically extending

axes for rolling on and applying pressure against the sides of the column.

The shaft ends of the roll 44 are each journalled in a vertically slidable bearing block 46, each of which is arranged to slide in a vertical slot 47 in a bracket 48 at the side of the column, there being screw and spring means 49 for varying the pressure of the roll at each side of the top of the column for distorting the column when desired.

The improved method and apparatus thus set forth, provide for the application of comminuted material to the top and sides of the moving clay column, so that the applied material will adhere thereto during all of the subsequent steps in the complete process of manufacturing the brick, tile, or the like therefrom; and furthermore provide for variably texturing, coloring, and distorting the moving clay column, whereby brick similar to hand pressed brick and the like may be manufactured by quantity production methods.

We claim:

1. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, and a curved inner surface connecting with the plane surface and forming with the side of the moving column a reservoir for comminuted material.

2. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, a curved inner surface forming with the side of the moving column a reservoir for comminuted material, and a surface connecting an upper edge of the plane surface with the curved surface.

3. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, a curved inner surface forming with the side of the moving column a reservoir for comminuted material, the plane inner surface having an angled upper edge, and a surface connecting the angled upper edge of the plane surface with the curved surface.

4. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving clay column, and angled inner surfaces connecting with the plane surface and forming with the side of the moving column a reservoir for comminuted material.

5. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, a curved inner surface connecting with the plane surface and forming with the side of the moving column a reservoir for comminuted material, and yielding means pressing the sled against the side of the column.

6. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, a curved inner surface forming with the side of the moving column a reservoir for comminuted material, a surface connecting an upper edge of the plane surface with the curved surface, and yielding means pressing the sled against the side of the column.

7. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving column, a curved inner surface forming with the side of the moving column a reservoir for comminuted material, the plane inner surface having an angled upper edge, a surface connecting the angled upper edge of the plane surface with the curved surface, and yielding means pressing the sled against the side of the column.

8. In apparatus for texturing clay products which includes means for moving a clay column, a sled including a plane inner surface adapted for being pressed against the side of the moving clay column, angled inner surfaces connecting with the plane surface and forming with the side of the moving column a reservoir for comminuted material, and yielding means pressing the sled against the side of the column.

In testimony that we claim the above, we have hereunto subscribed our names.

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